What Is Claimed Is:

1. A mask exchanging method in which mask exchange is performed on a mask stage movable in a predetermined direction, said method comprising:

an unloading process in which an unloading arm unloads a mask from said mask stage when said mask stage holding said mask is at a predetermined unloading position;

a loading process in which a loading arm drivable independently from said unloading arm loads a mask on said mask stage when said mask stage holds said mask at a predetermined loading position different from said unloading position; and

a moving process in which said mask stage is moved from said unloading position to said loading position in between said unloading process and said loading process.

2. The mask exchanging method of Claim 1, said method further comprising:

a measuring process in which a relative position between said mask and said loading arm is measured in a noncontact manner by the time a mask is loaded onto said mask stage; and

an adjustment process in which a positional relation between said mask and said mask stage is adjusted when loading of said mask by said loading arm onto said mask stage is performed, taking into

consideration results of said measuring.

3. The mask exchange method of Claim 1 wherein a mask carrier system that includes said unloading arm and said loading arm and said mask stage are mounted on different frames, respectively, and in said loading process a positional relation between said mask and said mask stage is adjusted according to a positional relation between said different frames.

4. The mask exchange method of Claim 3 wherein in said loading process, a relative positional relation between said mask and said loading arm is measured, and a positional relation between said mask and said mask stage is also adjusted, taking into consideration results of said measuring.

5. The mask exchange method of Claim 1 wherein said mask stage is provided in an exposure apparatus that synchronously moves a mask and a photosensitive object so that scanning exposure is performed on said photosensitive object with an illumination beam irradiated on said mask in order to transfer a pattern of said mask onto said photosensitive object, and

said unloading position and said loading position are set apart in a scanning direction, which is a direction in which said mask is moved during said

scanning exposure.

6. An exposure apparatus that transfers a pattern formed on a mask onto a photosensitive object, said apparatus comprising:

a mask stage that holds said mask and is movable in at least a predetermined uniaxial direction;

a mask carrier system that has a loading arm that loads a mask onto said mask stage when said mask stage is at a predetermined loading position and an unloading arm that is driven independently from said loading arm and unloads a mask from said mask stage when said mask stage is at an unloading position different from said loading position; and

a stage control unit that moves said mask stage from said unloading position to said loading position in between unloading operation of said mask by said unloading arm and loading operation of a mask by said loading arm.

7. The exposure apparatus of Claim 6, said apparatus further comprising:

a noncontact position measuring unit that measures a relative position between said mask and said loading arm in a noncontact manner by the time a mask is loaded onto said mask stage; and

a control unit that adjusts a positional relation between said mask and said mask stage when loading of

said mask by said loading arm onto said mask stage is performed, taking into consideration results of said measuring by said noncontact position measuring unit.

8. The exposure apparatus of Claim 6 wherein loading of a mask onto said mask stage and unloading of a mask from said mask stage are performed by combining relative movement of said loading arm and said unloading arm, respectively, and said mask stage within a predetermined plane, and relative movement of said loading arm and said unloading arm, respectively, and said mask stage in a direction perpendicular to said predetermined plane.

9. The exposure apparatus of Claim 8 wherein at least one of said loading arm and said unloading arm is movable in both said predetermined plane and in said direction perpendicular to said predetermined plane.

10. The exposure apparatus of Claim 6 wherein a plurality of masks can be mounted on said mask stage along a collinear direction in which said loading position and said unloading position are arranged.

11. The exposure apparatus of Claim 10, said apparatus further comprising:

a plurality of object stages that can move independently, each holding said photosensitive object.

12. The exposure apparatus of Claim 6, said apparatus further comprising:

an unloading buffer on which a mask that has been unloaded from said mask stage is mounted.

13. The exposure apparatus of Claim 12, said apparatus further comprising:

a loading buffer on which a mask to be loaded onto said mask stage is temporarily mounted.

14. The exposure apparatus of Claim 13 wherein

a positioning unit that mechanically positions a mask is provided on said loading buffer.

15. The exposure apparatus of Claim 6, said apparatus further comprising:

a loading buffer on which a mask to be loaded onto said mask stage is temporarily mounted.

16. The exposure apparatus of Claim 15 wherein

a positioning unit that mechanically positions a mask is provided on said loading buffer.

17. The exposure apparatus of Claim 6, said apparatus further comprising:

a plurality of object stages that can move independently, each holding said photosensitive object.

18. The exposure apparatus of Claim 6, said apparatus further comprising:

a main body on which said mask stage is mounted and transfer of said pattern is performed;

a carrier system supporting frame on which said mask carrier system is mounted, said frame arranged separately from said main body;

a measuring sensor that measures a relative positional relation between said main body and said carrier system supporting frame; and

a control unit that adjust a positional relation between said mask and said mask stage when said mask is loaded onto said mask stage by said loading arm, taking into consideration measurement results of said measuring sensor.

19. The exposure apparatus of Claim 18, said apparatus further comprising:

a position measuring unit that measures a relative position between said mask and said loading arm in a noncontact manner by the time a mask is loaded onto said mask stage, wherein

said control unit adjusts a positional relation between said mask and said mask stage, taking into consideration measurement results of said position measuring unit.

20. The exposure apparatus of Claim 6, said apparatus further comprising:

a position measuring unit that measures a relative position between said mask and said loading arm in a noncontact manner by the time a mask is loaded onto said mask stage; and

a control unit that adjusts a positional relation between said mask and said mask stage when loading of said mask by said loading arm onto said mask stage is performed, taking into consideration measurement results of said position measuring unit.

21. An exposure apparatus that transfers a pattern formed on a mask onto a photosensitive object, said apparatus comprising:

a mask stage that holds said mask and is movable in at least a predetermined uniaxial direction;

a mask carrier system that includes a loading arm used for loading said mask onto said mask stage and an unloading arm driven independently from said loading arm for unloading said mask from said mask stage;

a position measuring unit that measures a relative position between said mask and said loading arm in a noncontact manner by the time a mask is loaded onto said mask stage; and

a control unit that adjusts a positional relation between said mask and said mask stage when loading of said mask by said loading arm onto said mask stage is

performed, taking into consideration measurement results of said position measuring unit, and

an unloading position where said unloading arm performs unloading operation of a mask and a loading position where said loading arm performs loading operation of a mask with respect to said mask stage are set at different positions, and said apparatus further comprising:

a stage control unit that moves said mask stage from said unloading position to said loading position in between unloading operation of a mask from said mask stage by said unloading arm and loading operation of a mask onto said mask stage by said loading arm.

22. The exposure apparatus of Claim 21, said apparatus further comprising:

a main body on which said mask stage is mounted and transfer of said pattern is performed;

a carrier system supporting frame on which said mask carrier system is mounted, said frame arranged separately from said main body; and

a measuring sensor that measures a relative positional relation between said main body and said carrier system supporting frame, wherein

said control unit adjusts a positional relation between said mask and said mask stage when said mask is loaded, taking into consideration measurement results of said measuring sensor.